

APR 13 1944

CARNEGIE MAGAZINE

CARNEGIE
INSTITUTE

CARNEGIE
INSTITUTE OF TECHNOLOGY

CARNEGIE
LIBRARY

VOLUME XVII PITTSBURGH, PA., MARCH 1944 NUMBER 10



BOOK WORM BY KENNETH COOK

Thirty-first Annual Pittsburgh Salon of Pictorial Photography

(See Page 302)

THE CARNEGIE MAGAZINE

THE CARNEGIE MAGAZINE

PUBLISHED MONTHLY, EXCEPTING JULY AND AUGUST, IN THE INTEREST OF THE CARNEGIE INSTITUTE, THE CARNEGIE INSTITUTE OF TECHNOLOGY, AND THE CARNEGIE LIBRARY, PITTSBURGH, PA. SUBSCRIPTION PRICE ONE DOLLAR A YEAR; SINGLE COPIES TEN CENTS. ON SALE AT INSTITUTE POST OFFICE, AND THE BOOK DEPARTMENTS OF KAUFMANN'S AND THE JOSEPH HORNE COMPANY.

OFFICE OF THE PRESIDENT OF THE CARNEGIE INSTITUTE

WILLIAM FREW, Editor
DOROTHY NUTTALL, Editorial Assistant

EDITORIAL COUNCIL

ANDREY AVINOFF ROBERT E. DOHERTY
MARSHALL BIDWELL RALPH MUNN
JOHN O'CONNOR, JR.

VOLUME XVII NUMBER 10
MARCH 1944

O, how this spring of love resembleth
The uncertain glory of an April day;
Which now shows all the beauty of the sun,
And by and by a cloud takes all away!
—TWO GENTLEMEN OF VERONA

—3 D—

THE CARNEGIE INSTITUTE

Hours: Daily 10 A.M. to 6 P.M. Sunday 2 to 6 P.M.

CARNEGIE LIBRARY OF PITTSBURGH

Hours: Daily 9 A.M. to 10 P.M. Sunday 2 to 6 P.M.

FREE ORGAN RECITALS

From October to July. Every Saturday evening at 8:15 o'clock, and every Sunday afternoon at 4:00 o'clock.
MARSHALL BIDWELL, Organist

—4 D—

The Carnegie Institute, in the broadest sense, holds its possessions in trust for mankind and for the constant welfare and happiness of the race. Anyone, therefore, who by a gift of beautiful works of art, or objects of scientific value, or a donation to its financial resources, aids in the growth of these collections and the extension of its service is contributing substantially to the glorious mission of the Institute.

The CARNEGIE MAGAZINE freely grants permission to reprint without limit articles that appear in its pages, with the usual credit.

HOPE FOR THE FUTURE

The following is an extract from a letter from Mrs. Florence Fisher Parry:

The CARNEGIE MAGAZINE . . . never fails to elicit my interest and admiration for its excellent make-up and contents. It is such a satisfaction to be reminded by such tokens that the cultural life of America still goes on—and will, we feel confident, so long as such great institutions are permitted to maintain their life and work.

LINCOLN'S COMMON PEOPLE

The genius of the United States is not best or most in its executives or legislatures, nor in its ambassadors or authors or colleges or churches or parlors, nor even in its newspapers or inventors, but always most in the common people. Their manners, speech, dress, friendships—the freshness and candor of their physiognomy—the picturesque looseness of their carriage—their deathless attachment to freedom—their aversion to anything indecorous or soft or mean—the practical acknowledgement of the citizens of one state by the citizens of all other states—the fierceness of their roused resentment—their curiosity and susceptibility to a slight—the air they have of persons who never knew how it felt to stand in the presence of superiors—the fluency of their speech—their delight in music, the sure symptom of manly tenderness and native elegance of soul—their good temper and openhandedness—the terrible significance of their elections—the President's taking off his hat to them, not they to him—these two are unrhymed poetry.

—WALT WHITMAN
[Preface to "Leaves of Grass"]

SCHEDULE OF EXHIBITIONS

DEPARTMENT OF FINE ARTS

MARCH 24—APRIL 23
31st Annual Pittsburgh Salon of Photography.
APRIL 13—MAY 21
Paintings from the Collection of Howard Noble.
APRIL 10—MAY 10
"Meet the Artist."
MAY 10—JUNE 4
17th Annual National Exhibition of Arts and Crafts by High School Students, Auspices of the Scholastic.

CARNEGIE MUSEUM

THROUGH JUNE

Pacific Area Exhibition, including four schematic and pictorial maps, examples of native arts and crafts, various primitive weapons, utensils, art traditions, products, and so on.

KEEP TO LAW

Where law ends, tyranny begins.

—WILLIAM PITT

REPORT TO THE PEOPLE

What the Carnegie Library of Pittsburgh Is Doing in a Wartime Year

BY RALPH MUNN

Director, Carnegie Library of Pittsburgh



THE fundamentals of lasting peace through world organization is a question to which many Pittsburghers are now devoting much of their thought. This interest is reflected both in the reading of individuals

and in requests from the leaders of groups of all kinds, ranging from high-school societies to elaborately organized conferences of adults.

Post-mortem examinations are being conducted upon the remains of the League of Nations to determine the causes of its failures. Books tracing ethnological and nationalistic divisions, and those dealing with economic interdependence are in demand.

Wendell Willkie's *One World* was perhaps raised to best-seller heights by the prominence of its author, but it appears to have had a substantial effect upon popular thinking. Walter Lippmann's *U. S. Foreign Policy: Shield of the Republic* also reached the best-seller lists and was studied more intensively. These are the best known of the year's books on foreign policies, but they are by no means the only ones that have been widely read.

Interest in foreign countries goes far beyond the natural curiosity existing among the families and friends of our overseas forces. Russia is perhaps the object of the most inquiries; specifically, readers want to know to what extent Russian governmental, economic, and social conditions have been changed during recent years, a subject upon

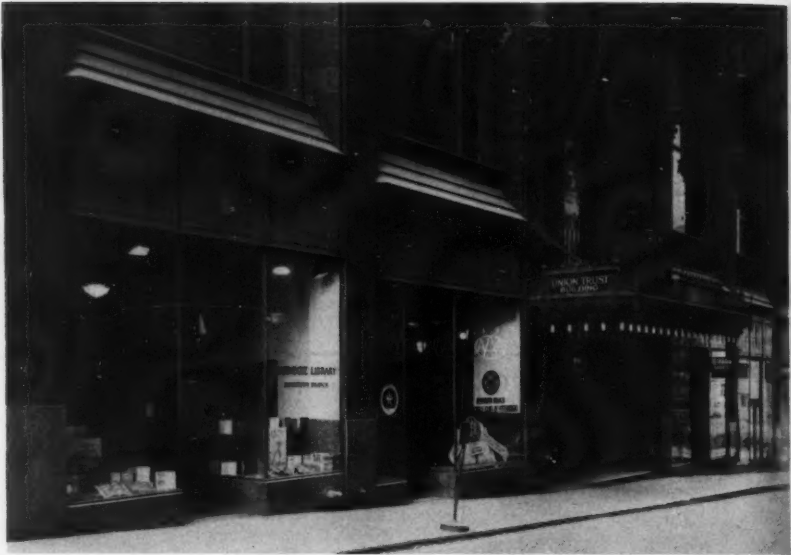
which few authors can write with assurance. Much of the interest in Germany centers upon whether the German people themselves are militaristic and aggressive or whether they have been duped by their leaders. Selecting books that are authentic from the great mass of those written on the run by poorly informed travelers is a job in itself.

The response to books on South America is somewhat disappointing. They are read, yes, and in good measure, but not as much as we librarians had hoped. Perhaps we expected too much, basing our hopes upon the extreme importance of a widespread understanding of our neighbors to the South.

The problems involved in the peace to come are infinitely more intricate than those which we faced in 1918. No one can pretend that we are now prepared to face them, but Pittsburgh librarians know that much helpful reading and discussion are now in progress.

Most popular of the war books are the personal narratives of observers. Expert reporting and concise, unadorned writing characterize the best of them. *Here Is Your War* by Ernie Pyle, *The Battle Is the Pay-off*, by Ralph Ingersoll, *Journey Among Warriors* by Eve Curie, and *Burma Surgeon* by Gordon S. Seagrave were favorites among Library borrowers.

Some phases of wartime reading which formerly held the spotlight vanished almost entirely during 1943. The masses of warworkers who crowded around the technical bookshelves during 1941 and 1942 are now being served through training programs within industry itself. Civilian defense is an utterly dead subject, so far as reading is concerned.



An early morning view of the busy Downtown Branch, which was the Library's own answer to the inadequacies of wartime transportation.

Wartime circulation of books appears to have become stabilized at about three million volumes. During 1942 the number of books lent for home reading was 3,166,567; in 1943 there was a drop to 2,938,937, but the losses came early in the year, and during the last few months there were gains that have been continued into 1944.

There were many periods during 1943 when the reference and reading rooms were almost deserted, but the telephones rang continuously. Forty per cent of the general reference questions were received by telephone; in the Technology Department, forty-six per cent came by telephone, and ten per cent by mail. Altogether the Central reference departments handled 42,517 questions, and an additional 10,078 were received at the Business Branch. In both cases, these numbers represent an increase over 1942. Orders for 8,082 photostats of library material give further evidence of the heavy demand for reference service.

Although it conducted no group work itself, the Library's influence in the community was greatly augmented through its services to group leaders. During 1943 the Reader's Consultant and other librarians gave a substantial amount of their time to formulating study programs and compiling lists of recommended reading for organizations of all kinds. Time spent in aiding the leader may result in far-reaching influence throughout the group's membership.

The new reading room for young people, which was built in a former light court by the W.P.A., was finally furnished and opened as the James Anderson Room.

It was Colonel Anderson, an Allegheny manufacturer, who invited the working boys of that city to come to his home on Saturday afternoons and borrow books from his own private library. One of the most regular borrowers, in the period just before and after 1850, was a youngster named

Andro
Carno
this
conce
peopl
burgh
memo
Th
Libra
whic
house
addit
fine n
repro
nized
beyon
tions
until
attra
were
train
Th
grou
hono
for m
Forec

THE CARNEGIE MAGAZINE

Andrew Carnegie. In later years Mr. Carnegie delighted in paying honor to this kindly man who was so greatly concerned about the welfare of young people. The Carnegie Library of Pittsburgh now pays its tribute to the memory of James Anderson.

The David H. Light Memorial Record Library and the listening room in which the records and phonograph are housed are by far the most popular additions of recent years. The need of fine musical recordings and facilities for reproducing them had long been recognized, but the response has gone far beyond the most optimistic expectations. From its opening on July 14 until the end of 1943, the record library attracted 3,855 listeners, of whom 1,295 were soldiers from the local university training programs.

This project was sponsored by a group of musicians who sought to honor the memory of David H. Light, for many years editor of *The Musical Forecast* and a leader in local musical

circles. An endowment fund to assure continuation of the record library is being raised.

It is largely this same group of musicians who form the Boyd Memorial Musicological Library Association. The Carnegie Library is deeply indebted to this Association for its aid in developing the entire Music Division.

The Library's own answer to the inadequacies of wartime transportation was to invade the Golden Triangle with its Downtown Branch. It was opened on September 20, at 442 Oliver Avenue, in a street-level storeroom of the Union Trust Building. By the end of 1943, this Branch had lent over twelve thousand volumes to those who are employed in the business section, and to shoppers. A substantial part of them had not used the Library recently, because of the difficulty in reaching it.

Shelf space limits the collection to about thirty-five hundred volumes, but they comprise a careful sampling of the Central Library's collections. Books



The Knoxville Branch Library—the building on the extreme left—is located at an important transfer point in a large shopping district.

not in the Branch collection are brought from Central as they are requested. Inquirers needing reference services are directed to the Business Branch on the second floor of the same building.

Other examples of taking the Library to the people are found in the housing projects, Glen-Hazel being the most recent one. Perched high on a hilltop overlooking Hazelwood, the project is so far from the Branch Library that few of its residents were being reached. The management provided a fully equipped library room in its administration building, and a thriving station was soon in operation. It is open two evenings and Saturday morning of each week and is administered by the Hazelwood Branch. Circulation during 1943 was 18,920.

The lower part of Terrace Village is now served by a station in the Leo A. Weil School, and an additional station will soon be opened in the upper section. The Arlington housing project, on the South Side, is also making provision for a library station.

In September the Knoxville Branch was forced to vacate the Rochelle School Annex, due to its sale by The Board of Public Education. The old location, three blocks from the local shopping district, was distinctly poor, and the Branch was never used to its full capacity.

A survey of the district pointed unmistakably to Brownsville Road as the most strategic place from which to serve this large area. There were, however, no store buildings available that were large enough to house the Branch. Finally, and as a purely temporary expedient, it was decided to abandon service to children in the Branch and to give them their books through the schools. Children's librarians visit each parochial school weekly to distribute books; the public schools have their own library rooms. By taking the books to the children, more of them are reached than formerly, and the circulation of books in the Knoxville district has actually increased. The children



Another example of taking the Library to the people is found in this Library station in the Glen-Hazel housing project.

are, however, getting none of the advantages of a well-stocked children's reading room, nor the best services of the librarians. School stations are so crowded and the work so hurried that little can be done beyond the mere distributing of books.

For adult services, the new location is ideal. An important streetcar transfer

point and a large shopping district bring people to the Library's door.

When building is again possible, a new Branch large enough for both children and adults should be built on Brownsville Road. A store type of building erected by a private owner for lease to the Library, as at Brookline, is recommended.

THE DESCRIPTIVE POWER OF MUSIC

By MARSHALL BIDWELL

Organist and Director of Music, Carnegie Institute

[One of a series of lectures delivered by Dr. Bidwell in the Music Hall during the Lenten season.]



EVERY concert-goer hears one of two kinds of music when he listens to a performance—program music, which describes an object, tells a story, paints a picture, or suggests a specific mood; or its op-

posite, pure or absolute music, which tells no story and describes nothing.

Bach fugues and almost all symphonies, concertos, string quartets, and sonatas are absolute music. They are usually known by their opus numbers or the key in which they are written; they do not have descriptive titles. There is no hint of a story or a picture, and enjoyment of this kind of music is not dependent upon any external help. It is not necessary, for example, to take on a sentimental title such as the "Moonlight" Sonata to make this music intelligible. Beethoven did not call it the "Moonlight" Sonata; someone else did so afterward. Therefore it is not program music. How do we know that Beethoven was thinking of moonlight when he wrote it?

No story is necessary, for example, when you listen to Bach's *Air on the G String*. You are at liberty to make up a story for it if you wish, but you probably will not do so, as you can perfectly well enjoy the music to the fullest extent without such outside help. Of course, this kind of music does express a deep emotion, but it is an emotion that cannot be put into words. And that is true of the highest types of all abstract or absolute music.

What about this program music that so brazenly and unashamedly sets out to tell a story, and is considered by the absolutists a sort of poor relation? Program music is music that tends toward representation rather than toward formal beauty, and includes such pieces as the *Peer Gynt* suites, *The Afternoon of a Faun*, *Danse Macabre*, *The Cat*, *The Flight of the Bumblebee*, *The Squirrel*, or a Strauss symphonic poem.

For comparison with the Bach *Air* let us consider one of the best known popular pieces of program music—*The Swan* of Saint-Saëns. They are somewhat similar in that they both are music of lovely and meditative beauty, but *The Swan*, as music, has a different purpose than the *Air on the G String*. Its title is designed to excite a mental image, something that can be put into

words. It is something more than an expression of vague emotion, for it attempts to paint a picture and provoke a definite mood. Here the composer becomes the painter, for the value of a descriptive title is that it arouses an image, and the listener has the double pleasure of beautiful sound plus the delight of a memory of something known and already loved. We are reminded of a certain lovely lake, or that unforgettable scene when the incomparable Pavlova danced *The Swan*. So you see that in program music, we, the listeners, find our mood attuned to a double—a twofold—beauty.

Let us now examine some of the devices that clever composers have used to describe scenes, animals, and events. In the case of *The Swan*, we have a gentle slow-moving, rippling accompaniment that is analogous to the rippling of water on a quiet lake, while the graceful melody might easily suggest some graceful object such as a swan.

Music is full of such analogies and symbols, musical symbols that imitate or describe action of some kind. The most obvious are those describing moods. Slow-moving tones express sadness, lively tones denote joy. Deep tones evoke an impression of ponderousness, obscurity, anguish, or dejection. High tones naturally express lightness, luminosity, things divine. Wagner, in his *Prelude to Lohengrin*, produces the impression of supernatural light by having the violins play in their highest register. It is in effect a musical expression of pure mysticism, developed mainly from the delicate opening theme representing the heavenly vision of the angels descending slowly from Heaven with the Holy Grail.

I don't suppose that any two of us listen to music or react to it in exactly the same way. People often say to me: "I don't want to be told what the music means, I prefer to find out for myself." Some people have more imagination than others and some let their imaginations run wild. And as for absolute music, it is annoying to hear

radio commentators telling picturesque stories about symphonies when stories were never intended. In listening to absolute music, a Brahms symphony, for instance, we don't want to be told what the music means, for no two people would agree, anyway. Besides, music consists of subtleties of feeling that simply cannot be put into words. It is just as ridiculous to inquire into the meaning of a piece of absolute music as to inquire into the meaning of a sunset. Music appeals directly to the roots of sensation and emotion and stirs us in all sorts of vague ways. The slow movement of a Beethoven symphony fills us with the same overpowering sense of exaltation and worship as a sight of the Alps. The highest types of music have this effect on us.

Of all the arts, music is the most direct and immediate in its effect upon us. When we look at a painting we think first of the object portrayed there; the object in turn suggests the emotion. Turner conveys an emotion by painting a sunset, but Beethoven conveys it direct. Music works from within outward, while painting works from without inward. Since music, then, is the most direct expression of emotion that we know in the arts, we can appreciate the standpoint of the absolutists who complain that a story or program in connection with music often acts as a sort of crutch and is in some cases a real hindrance rather than a help. Certainly, in listening to absolute music, everyone should be allowed to enjoy his own revelations and visions, unfettered by word, title, or program.

But when we listen to program music it is a different matter. There we have a definite title or program, in order to enjoy the piece in the way the composer intended. We have an endless amount of music that is frankly pictorial in character. The main objection to program music is the fact that many composers have gone wild in their attempts to imitate sounds of nature and of animals. The same criticism may be made in all art. Some people seem to think that the

function of art is to reproduce nature, and the more lifelike, the better it is. We have all seen pictures of cats so lifelike that dogs will bark at them. Painting that is purely photographic is apt to be lacking in character and imagination. And so it is with music.

The best type of program music is that which interprets moods and emotions rather than sounds and noises. Program music, then, can be divided into two classes: the objective, which imitates noises or objects; and the subjective, which interprets moods and emotions. In the objective class we find music that is frankly imitative, such as birdcalls and animal sounds, the splashing of water, crashing of thunder, descriptions of storms and battles—all invaluable aids to the descriptive writer. The danger of this objective type is that it is too easy for the composer to make a burlesque out of it.

In the symphonic poem, *Danse Macabre* by Saint-Saëns, we have one of the clearest and most exciting pieces of program music. It is predominantly narrative; the music illustrates a definite sequence of events. But it also has a great deal of actual imitation, much more than would ever be permitted in absolute music. First, we hear the twelve strokes of the clock; next, whispered octaves in the bass suggest the opening of the graves. Then, suddenly, Death is heard, tuning his fiddle, with the E string half a tone flat. Later we hear the weird whistling of wind through the trees, suggested by chromatic runs. In the orchestra, the xylophone realistically imitates the sound of bones on tombstones. After a series of fortissimo chords, we hear on the oboe the crowing of a rooster. Soft agitato chords indicate the scurrying of the ghosts back into their graves.

Now, in contrast to this very obvious type of descriptive music, there is the higher type mentioned before, which we call the "subjective." Edward MacDowell and Robert Schumann are perhaps the outstanding examples of program composers who express a mood.

These composers disliked mere imitation or musical narration. MacDowell believed in poetical suggestion by such titles as *To a Wild Rose*, *To a Water Lily*, *From an Indian Lodge*, and *A.D. 1620*.

The composers of subjective program music paint moods, and suggest emotions and spiritual processes in tones, but practically never descend to pure imitation. Subjective program music, in its highest form, is practically the same as absolute music. It has little or nothing in common with the billboard school of tone painting, which came later, with the development of realistic orchestration.

It reflects poetic thought, and much is left to the imagination of the listener. Only the title gives a hint as to what the composer had in mind. It can plainly be seen that good program music can be placed side by side with the best absolute music. It has the power of arousing emotions within us, immediately, even before we begin to think of what the music means.

Ernest Newman, a great champion of program music, says that it is impossible for program music to speak for itself without a knowledge of the program; we must not expect it to appeal in the same way as absolute music. If we are to listen to it intelligently, we have a right to know what story or picture the composer is presenting. The critics of program music say that its weakness lies in the fact that it means little without its story. This is true, but it is equally true of the song or the opera. Imagine listening to Schubert's *The Erl King* without knowing the title or the story. As a piece of absolute music, some parts of it would mean absolutely nothing, but when you follow the story these same passages now take on a new meaning. Music has certain limitations; it cannot tell a definite story without the help of a title or program notes, just as we cannot expect to understand the meaning of a song without knowing the words.

One might ask why it is that we hear so little argument today between the

two rival schools of musical thought—the programmists and absolutists. One reason is that almost everyone is writing program music. There is really no quarrel between the two camps, for both have their place in the art and there is so little difference between the best of each class. The real test of any music is whether it is intrinsically good. The real danger in program music is that the composer too often becomes so preoccupied with telling his story that the musical design suffers. We have seen that program music can be made very beautiful if its inherent abstract beauty is not sacrificed to a pitiless realism.

Unless the music as music is strong and beautiful, no program will save it. The trouble with much of program music is that it has too much program and too little music.

Whether you are a programmist or absolutist—that is, whether you like descriptive music or pure music—let us gratefully accept the noble achievements of both schools. We should be thankful that there is room for both types, and if we look beneath the surface we see that they both have a common basis. "For after all, the glory of music lies both in its inability to describe definite events, and in its unrivalled power to idealize."

POPULAR PRIZE IN ASSOCIATED ARTISTS EXHIBITION

OTTMAR VON FUEHRER, staff artist for the Carnegie Museum, has won the popular prize in the thirty-fourth annual Associated Artists of Pittsburgh Exhibition with his portrait, "Mimi." The prize is a \$100 War Bond.

Mr. von Fuehrer is well known to readers of the *CARNEGIE MAGAZINE*, both as an author in these pages and for his creative work in painting the backgrounds of the various fine habitat groups in the Museum, a work which

has won him a nationwide reputation.

The second highest number of votes in the balloting for the popular prize was received by Norwood MacGilvary for "Here and Elsewhere," and Earl Holdren received the third highest number for his "Soldier's Prayer." Ninety per cent of the votes were cast for a selection from the section of oil painting.

The exhibition of the Associated Artists of Pittsburgh is always a popular one with Pittsburghers. This year, however, there was a heartening increase in the attendance, not only to see the exhibition itself, but also in connection with the Monday night forums. Last year the highest attendance at a forum was 150, whereas this year the group attendance reached as high as 296, with only one forum drawing less than 225 people.



MIMI BY OTTMAR VON FUEHRER

NO SNAKES AMONG THE SHAMROCKS

By M. GRAHAM NETTING

Curator of Herpetology, Carnegie Museum

[Reprinted from "Fauna," March 1942, a quarterly publication of the Zoological Society of Philadelphia]

SCENE: Any herpetologist's laboratory.

TIME: March 17, any year. (Phone rings and herpetologist lifts receiver wearily.)

VOICE: Hello. Do you know anything about snakes? (This is a frequent and always embarrassing question whether it is asked on St. Patrick's Day or any other day. No herpetologist would dare claim that he knew all about snakes; on the other hand, he must admit to some knowledge or his questioner will demand insistently that the "snake man" be called to the telephone.)

HERPETOLOGIST: Well, I've been studying snakes for fifteen years and . . .

VOICE (Interrupting): We've been having an argument and I want you to settle it. Are there any snakes in Ireland?

HERPETOLOGIST: No.

VOICE: Fine. I win the bet. I said that St. Patrick drove the snakes out of Ireland.

HERPETOLOGIST: Hold on! I said that there were no snakes in Ireland, but I didn't say that St. Patrick was responsible for their absence.

VOICE: Well, if there aren't any snakes in Ireland, how do you know that St. Patrick didn't drive them out?

HERPETOLOGIST: Well, New Zealand doesn't have any snakes and it wasn't discovered until centuries after St. Patrick's death. Ireland and New Zealand are snakeless for precisely the same reason—snakes haven't been able to reach them.

VOICE: Some people say that the soil of Ireland kills all poisonous animals.

HERPETOLOGIST: If this were true, Irish soil would be imported in large quantities for use in snake-infested regions. The real explanation seems to

be that the Ice Age killed off, or forced southward, any snakes which lived in Northern Europe. After the ice melted, some thousands of years ago, the animals spread toward the British Isles, which were part of the continent of Europe about that time. Ireland, however, was separated from Great Britain before snakes reached the area, and Great Britain, in turn, was cut off from the continent only a little later. This is obvious because there are about fifty different snakes in Europe, while there are only three in England. This peculiar history of the islands may also explain the fact that the European polecat, which is actually a ferret and not a skunk, occurs in England but not in Ireland. Some Irishmen even go so far as to take pride in the fact that the English hare is not a native of their country; the only native hare in Ireland—the Irish hare—is a northern type, closely related to the Scottish hare.

VOICE: You say there are no polecats in Ireland, but there are lots of them in England? Thanks, Mister!

HERPETOLOGIST: Wait! I didn't say quite that . . . (realizing that the phone is dead, he replaces the receiver with the sad apprehension that a scientific statement will be put to uses other than the purpose for which it was intended.)

This conversation, although shorter and less vehement than many, typifies the St. Patrick's Day services of a herpetologist to his public. April Fool's Day may be the greatest annual trial to a zoo employee, but nearly every herpetologist, on the evening of March 17, can answer the customary wifely question, "What did you do today?"



THE HERPETOLOGIST ON ST. PATRICK'S DAY

by saying, "I answered the phone."

I shall attempt to outline the probable origin of the belief that St. Patrick was a veritable Pied Piper of snakes and toads, because I believe that it is incumbent upon a critic of ancient legends to explain how they may have originated. I include toads deliberately, for St. Patrick is sometimes credited with having banished the natterjack toad from Ireland, although this species actually occurs there today in certain places. It is patent, both from historical records and from artifacts found in the country, that successive waves of invaders from the eastern Mediterranean reached Ireland in very early days. It is not entirely clear how many such invasions occurred, or exactly which peoples participated in them, but there is cogent evidence that the invaders, coming from a region where serpent worship was prevalent as early as 4500 B.C., introduced features of their religion to the natives of Ireland. Only a few scholars can disentangle symbols and names of Druid origin from those

of the serpent-worshipping Phoenician or other maritime invaders. It is apparent, however, that the composite ceremonies of the pagan Irish contained many elements of serpent worship at the time when St. Patrick arrived as a missionary about A.D. 432. According to the early chronicles, St. Patrick's prayers and holy zeal resulted in the complete overthrow of the Druid priests, and in a rapid conversion of the people to Christianity. Thus, in Ireland, as in other parts of the ancient world, Christianity triumphed over serpent idolatry. In the literature of many nations this triumph is symbolized by graphic accounts of heroes who slew dragons or great snakes. St. Patrick certainly merited canonization, for the eradication of snake worship must have been a Herculean task, and one far more difficult of accomplishment than the extermination of real snakes.

Although the fauna of Ireland is small, it exhibits many features of interest. The oft-repeated statement that the Irish fauna is merely an impover-

ished English fauna is not only offensive to Irish readers, but also zoogeographically inaccurate. Ireland harbors certain northern animals that do not occur in England, although they may be found in Scotland. Various plants and animals of southern derivation, with their nearest extant relatives in the Pyrenees or the Iberian peninsula, exist in Ireland, although they are not represented elsewhere in the British Isles. Some few of these distributional anomalies may be related to the mildness of the Irish climate, which is admittedly genial enough to permit captive lions to survive the winter in unheated shelters in Dublin. It is scarcely correct to say, however, as some romancing writers have done, that the Irish environment is too glorious to nurture any noxious creatures. According to at least one writer—possibly Irish—Ireland and Heaven have many features in common, not the least of these similarities being the absence of wild beasts. Since I have never visited either, I am obviously in no position to affirm or to deny the validity of this statement. I can note in passing, however, that the great zoogeographer R. F. Scharff, himself a resident of County Dublin, in 1907 admitted that the African wild cat might still occur in certain remote parts of western Ireland.

To those who crave enlightenment about Irish animals, I commend the writings of Scharff; for those who prefer a touch of "blarney" in their literature, I prescribe Giraldus Cambrensis, famous British ecclesiastic and historian, who visited Ireland in 1184. An early herpetological experiment, according to Cambrensis, was performed to determine whether the Isle of Man should belong to Ireland or to Britain. "Since the island allowed venomous reptiles, brought over for the sake of experiment, to exist in it, it was agreed by common consent that it belonged to Britain." It should be noted that Mr. Wright, who edited the translation of Cambrensis' Historical Works from

which my quotation is taken, expressed his skepticism of this tale.

Although much of Cambrensis' writing is, as I have indicated, more entertaining than factual, he did show amazing discernment in his reference to the absence of snakes in Ireland. I believe that our last reference to this subject might well be couched in the words of this early traveler and priest, who wrote over seven hundred years ago: "Some indeed conjecture, with what seems a flattering fiction, that St. Patrick and the other saints of that country cleared the island of all pestiferous animals; but history asserts, with more probability, that from the earliest ages, and long before it was favored with the light of revealed truth, this was one of the things which never existed here, from some natural deficiency in the produce of the island."

ICONS AT THE METROPOLITAN

THE exhibition of Russian Icons belonging to Mr. George R. Hann, of Sewickley, which closed at the Carnegie Institute on March 26, will next be shown at The Metropolitan Museum of Art in New York. The exhibition will open on the Russian Easter, April 16, and the introductory address incidental to the opening will be given on that afternoon by Dr. Andrey Avinoff, Director of the Carnegie Museum and the foremost authority in this country on the subject of Russian Icons.

NATURE'S TEACHING

Nature that framed us of four elements,
Warring within our breasts for regiment,
Doth teach us all to have aspiring minds:
Our souls, whose faculties can comprehend
The wondrous architecture of the world,
And measure every wandering planet's course,
Still climbing after knowledge infinite,
And always moving as the restless spheres,
Will us to wear ourselves, and never rest,
Until we reach the ripest fruit of all,
That perfect bliss and sole felicity,
The sweet fruition of an earthly crown.

—CHRISTOPHER MARLOWE
(Tamburlaine the Great, Pt. 1)

PICTURES—NOT OF THE WAR

Some Notes on the Thirty-first Pittsburgh Salon of Pictorial Photography

By C. E. LESHER

Member, Pittsburgh Salon

PITTSBURGH has the distinction of being the home of certainly one of the oldest, as well as the most famous, International Jury Salons of Pictorial Photography, the thirty-first annual exhibition of which is now being shown in the Carnegie Institute galleries. I will not attempt to define "Pictorial" as applied to photographic prints, but I can tell you about this Salon and how the pictures for it are collected, selected, and rejected as well.

Anyone may send prints, whether or not he receives one of the thousands of invitations sent out by the secretary each year. Since making pictorial photographs is a hobby, most of those who are successful may be counted on to contribute year after year, though some revert to golf or skeet shooting, and some few tire and just plain quit. New names appear every year. The completeness of the secretary's mailing list has much to do with the representative coverage of the Pittsburgh Salon. Besides the invitations that go out in this country, many are sent abroad—in years gone by, in French and German; and now, in Portuguese and Spanish. When the war cut off communication with the continent of Europe and the source of some of the world's finest photographs, South America was invaded with invitations. This year there are prints from Argentina, Brazil,



PHYLLIS BY W. O. BRECKON, A.R.P.S.

Mexico, and Peru. Photographers in Australia, Great Britain, Union of South Africa, Hawaii, and Canada continue to send their pictures.

No contributor may send more than four prints. This year there were 367 who sent nearly 1,400 prints, of which 226 were from foreign countries. When the packages are received, the Print Committee of the Salon takes charge, checking lists and sorting and preparing for the

judging. Of all the work that is done to prepare for an exhibition of this size, that of the Print Committee is the most onerous and the least glamorous. Volunteers all, they labor long evenings just for the joy of the job.

At Pittsburgh there are always three jurors—selected because of their recognized talent and experience for this exacting task. They seldom refuse an invitation to come to Pittsburgh to serve. There is one thing certain about such jurors—no two combinations of men would ever select the same prints. These three men, sitting side by side under shaded lights, look at each and every print as it is passed before them by the Print Committee. In some secluded room in the Carnegie Institute, these men pass judgment on hundreds of prints, while in the background, members of the Photographic Section of the Pittsburgh Academy of Science and Art, the official name of the Salon

organization, sit in breathless anticipation, silently agreeing or disagreeing with the jury's vote.

There is but one charge to the jury—"Without fear or favor, select the prints that are outstanding. There is no limit as to the total number." From then on, it is the personal opinion of the individual jurors. Two approvals are sufficient to vote the acceptance of a picture. Some juries are "tough" and some are not, as appraised by the onlookers, with judgments tempered by the fate of their individual efforts. But, over the long range, juries are consistent. In the past ten years there have been 18,000 prints submitted to the Pittsburgh juries and 3,000 prints, or 16.5 per cent, accepted. With the exception of one year in this period, the percentage of acceptances has ranged between 11.5 per cent (1944) and 18.5 per cent (1935)—that is to say that one out of each seven prints sent to Pittsburgh is accepted.

Rejection is always more quickly and unanimously accomplished than acceptance. Whereas on the first viewing, not more than one in a hundred gets the "yes" vote of all three jurors, one half or more of the total is finally rejected. Lack of quality condemns more prints than any other feature. There is seldom any debate as to whether or not a particular photograph has quality. Dull, muddy work is quickly rejected. When you see the Salon, you see only the best, with no opportunity for comparison with those not of the best, by which you might better understand the meaning of print quality.

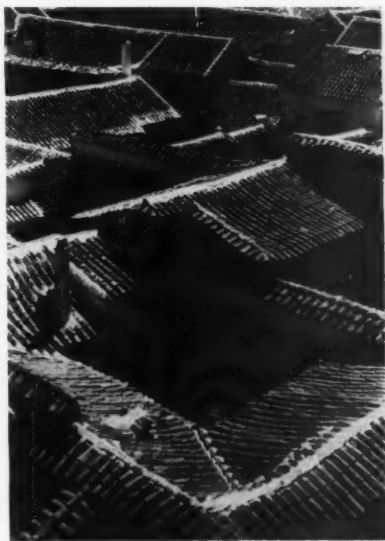
There must be something more than photographic quality, however, to gain acceptance. There must be interest. Interest is most often found in simple subjects. The portrait of a child, "Phyllis," reproduced here, is an example of simple subject in a print of exquisite quality, which you must see on the wall to appreciate.

Jurors are opinionated men whose judgments are tempered by long experience in making and handling and discussing photographic prints. They

have individual and personal likes and dislikes. One may be particularly interested in portraits, and it must be an exceptionally good portrait print that he will accept. Another wants "atmosphere" in his pictures and likes every landscape with hazy background. Careless or inexpert handwork in a print is always detected and rejected. Human interest, as in the "Book Worm" reproduced on the cover, is an asset to a print. It helps to get many a print into the show.

One of the commonest subjects for pictorial photography is the "pattern." It may be dishes, flowerpots, shingles, or the ends of piled logs. It may be paving blocks or flowers, but in the accompanying reproduction it is the "Roofs of Chuquisaca." You will find other "pattern" pictures on the walls at this and other Salons. Snow scenes, such as "Winter's Eve," always find favor with jurors and the general public alike.

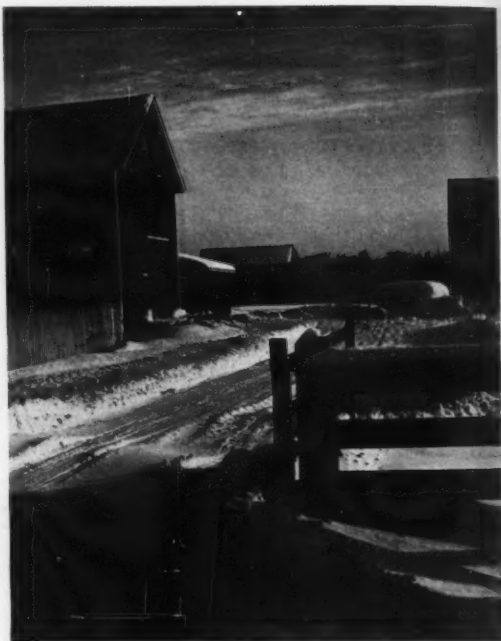
After the prints have all been viewed, there are, at Pittsburgh, three piles.



THE ROOFS OF CHUQUISACA (BOLIVIA)

BY ELENA HOHMANN

One is thin and contains those finally accepted. Another is deep and high—those finally rejected. In between is the stack of "re-considers"—those on which two of the three jurymen have expressed a preference. When they begin to pick this lot over, the arguments of a vocal jury are an education in rationalization, as well as in pictorial photography. For, oftentimes, the juror who says, "I like it. I vote for it," must defend his decision against the one who does not like that picture. Because there is no critical measurement of the properties of a pictorial photograph—although books have been written seeking to establish standards—the juror leans on such arguments as "atmosphere," "placing of center of interest," and the opposition says, "So and so did it better years ago." The result is hard competition and he whose work has been accepted has reason to be proud, and he who almost, but not quite, got in, can find solace in thinking that another jury might have accepted his pictures.



WINTER'S EVE BY MICHAEL J. ROLL

The Pittsburgh Salon will be open to the public each day from 10 A.M. to 6 P.M. at the Carnegie Institute galleries, March 24 to April 23; and on opening night, March 24, and through March, from 6 to 10 P.M., also.

CARNEGIE MUSEUM NATURE CONTEST

THE eleventh annual Nature Contest will be held at the Carnegie Museum on Saturday, April 29. Boys and girls of the elementary grades—five through eight—will identify specimens in the morning; and in the afternoon more difficult specimens will be added to the collection, which will then be identified by the senior group—grades nine through twelve.

The specimens include models, preserved and living material in the natural

history fields of birds, insects, mammals, reptiles, plants, fish, amphibians, invertebrates, rocks and minerals, and fossil plants. Prize books are awarded to the winners.

This annual Nature Contest attracts nature students not only from western Pennsylvania, but also from the communities bordering on it. An article in the May issue of the *CARNEGIE MAGAZINE* will describe the contest in detail, with pictures of the contestants.



THE GARDEN OF GOLD



BEFORE noting the progress of the 1946 Endowment Fund of the Carnegie Institute of Technology, it is a pleasure to acknowledge here two recent gifts to the Carnegie Museum. They are: \$1,000 from Mr. George H. Clapp, the devoted Chairman of the Museum Committee, and \$1,500 from the Childs Frick Corporation. These contributions indicate a constant interest in the field of scientific research as carried on by the Museum, both here and in the field, and they come from donors who have been equally and consistently generous in the past.

The month of February 1944 has made the Endowment Fund richer by the sum of \$1,479.74. This sum has been contributed to the general endowment and to various established funds in gifts ranging from \$1 to \$100 and has come from friends and alumni of Tech new to giving and from those who have made previous contributions of other or like amounts. For instance, Martin F. Murphy, Jr., has this month sent in to the Alumni Federation his third \$100 contribution toward the Clifford B. Connelley Memorial Scholarship Fund, which he set up in October 1943. What a shining example is set herewith to other alumni who have not yet been roused to the needs of the Carnegie Institute of Technology in raising the \$4,000,000 by June 30, 1946. Then the Carnegie Corporation of New York will match this sum with the \$8,000,000 that they have so richly promised, to make a new total of \$12,000,000 for endowment for Tech.

We wish also to acknowledge here several other gifts of \$100 each. Howard C. Wertenberger has earmarked his gift of \$100 for the William L. Marks Memorial Scholarship Fund, a fund that has also been augmented by \$40 from Glenn J. Moorhead and Frank E. Foote. E. C. Ramage has contributed

\$100 for general endowment. The Chemistry Department Research Fund is the recipient of Thomas F. Brastow's \$100 check, as well as of \$50 from F. N. Speller, and \$25 from C. P. Marsden, Jr. The Chemistry Department Faculty have also made a further contribution to this chemistry fund, this time with gifts amounting to \$426.99. Through the efforts of this loyal group of faculty members, the special endowment fund for chemistry research has already reached the total of \$5,223.83.

The general endowment fund, for which many donors prefer to designate their gifts, has been increased this month by two Series F United States Savings Bonds, at \$18.50 each, from Major Gordon F. Durr and the Washington, D. C., Alumni Clan. The sum of \$211.75 has also been added to this fund by contributions from W. S. Bedell, Jr., Mrs. W. Howard Bull, William M. Eichleay, Lynn E. Exline, Albert K. Fischer, Robert S. Fish, Walter Gray, John H. Hartman, Arthur W. Hedgren, Mrs. Charles L. Inglefield, Jr., C. R. Johnson, Frank W. McCulloch, John F. Maxwell, James W. Milliken, Lt. Col. James C. Sawders, Henry J. Schultz, Ambrose C. Sedlacek, Commander Winthrop Slocum, Dorothea E. Steinmacher, Maurice Stubnitz, William Sulin, Commander and Mrs. D. L. Trautman, and the Youngstown Women's Clan.

This general fund was also the recipient of gifts of \$33 from the Rochester, New York, Alumni Clan and of \$31 from the Buffalo Clan, which came as a result of a radio quiz. The Rochester Clan challenged the Buffalo Clan to a "Quiz of Two Cities," with the stipulation that the contestants donate their winnings to the Carnegie Tech Endowment Fund. The Buffalo Clan was the winner of the quiz contest, but the En-

CARNEGIE TECH 1946 FUND

If Carnegie Tech raises \$4,000,000 before July 1, 1946, the Carnegie Corporation of New York will appropriate the sum of \$8,000,000 for general endowment, or will appropriate two dollars for each one dollar raised by Carnegie Tech up to that limit.

Of the \$4,000,000, not more than \$1,333,333 may be in land and buildings located within specified campus boundaries. Thus, if this maximum amount is assumed to be for such land and buildings, then at least \$2,666,667 must be for the permanent endowment fund.

The situation as of February 29, 1944, was as follows:

GRAND TOTAL TO BE RAISED	BREAKDOWN OF TOTALS	
	<i>For Land and Buildings</i>	<i>For Endowment</i>
\$4,000,000	\$1,333,333	\$2,666,667
Total Raised:	Already Raised:	Already Raised:
a. Received. \$1,866,809.73	a. Received. \$498,783.17	a. Received. \$1,368,026.56
b. Pledged.. 539,333.00	b. Pledged.. None	b. Pledged.. 539,333.00
Total... \$2,406,142.73	Total... \$498,783.17	Total... \$1,907,359.56
AMOUNT YET TO BE RAISED	AMOUNT YET TO BE RAISED	AMOUNT YET TO BE RAISED
\$1,593,857.27	\$834,549.83*	\$759,307.44

*That is, contributions for land and buildings up to this total will bring the 2-for-1 appropriation from the Carnegie Corporation. The entire sum of \$1,593,857.27 yet to be raised may of course be in the form of contributions for endowment.

dowment Fund was really the last winner, with a total of \$64.

Another unexpected gift came to the Garden of Gold through the twenty-fifth anniversary of a Tech professor. Edith M. Winchester, head of the Department of Secretarial Studies of the Margaret Morrison Carnegie College, celebrated her anniversary accompanied by the gifts and good wishes of many of her former students, one of whom—Mrs. Tobias Kotzin—sent a check for \$25, with a note that its use was to be left in Miss Winchester's hands. She generously turned it over to the Secretarial Scholarship Fund, where it will grow, under the aegis of the Carnegie Corporation and the Buhl Foundation, to six times its size in 1946.

Other special funds besides those mentioned above have been increased

during the month of February. The Class of 1917 Engineering Scholarship Fund has received \$10 from a constant donor. The Jane Fales Memorial Scholarship Fund has received an \$18.50 United States Savings Bond, Series F, from Mr. and Mrs. Norman C. Curtin. The Hower Memorial Fund has been augmented by \$11 from L. Eugene Krebs and Thomas F. Shea, and the Mary Louise Brown Graham Memorial Scholarship Fund was increased by \$5 from Mrs. G. H. Pfeiffer. The Frances Camp Parry Memorial Fund has received \$10 from Katherine Shuman.

All these gifts acknowledged above, when added to the total already raised toward the 1946 agreement, make a new total, as of February 29, 1944, of \$1,866,809.73 received and \$539,333 pledged, or a total of \$2,406,142.73.

PLANT FIBERS

*America Must at This Time Seek New Sources for
These Necessary Materials*

BY LEROY K. HENRY

Assistant Curator, Section of Botany, Carnegie Museum



In the early dawn of civilization man began to grope around for materials that could be made into ropes, twines, and clothing. His discovery that the fibers in the stems and leaves of certain plants could be fash-

ioned into cordage and spun into clothing brought about a tremendous advance in his slow upward climb.

Today many of our native plants and certain cultivated ones furnish fibers that have become necessary and indispensable to our way of life. A great many of these fiber plants are native or have been cultivated extensively in countries now in the hands of the enemy or surrounded by them, which makes necessary a more extensive cultivation of fiber plants in the Western Hemisphere or the substitution of native ones wherever possible.

Plant fibers are classified according to their structure and their origin in different parts of the plant. Long, or multiple-celled fibers are of two kinds: hard, or leaf fibers, which are hard and stiff in texture and extend lengthwise through the pulpy tissue of the leaves and leaf stems; and soft, or bast fibers, which are soft and flexible in texture and extend through the inner bark of stems and stalks. Short, or one-celled fibers are those found as seed hairs, or hairs produced inside seed pods.

Flax is a native of Asia, Europe, and Africa, and is perhaps the oldest textile

plant of human use. Its bast fibers were known to the Greeks and Egyptians, and even to the Swiss lake dwellers. The plants are annual herbs belonging in the flax family, with clusters of blue flowers less than an inch across. The flax plants are usually pulled by hand to obtain as long fibers as possible. To loosen the fibers, which are just beneath the hard outer covering of the stem, the plants are retted. This retting usually consists of letting the plants lie on the field, where they will be exposed to the dew and rains until the bark is decayed.

Russia produces more than half of the world's supply of flax. Ireland, Holland, France, Italy, and Egypt are important producers, but that from Belgium is of the best quality. A limited amount is grown in the United States, chiefly in Michigan, Montana, North Dakota, and Minnesota. Formerly the United States imported about \$3,000,000 worth of flax fibers annually. These fibers are known as linens and are used for twines, canvas, lace, and linens; cambric and damask are among the finer linens. As a useful fiber, flax ranks next to cotton, since it can be bleached white by exposure to the sun and by treatment with dilute solutions of chloride of lime.

The bast fibers from the stalks of the hemp plant, a member of the nettle family, are used extensively in making strong twines and ropes. Hemp is one of the earliest known fiber plants, having been in cultivation several years before the birth of Christ. It is a native of Asia and Europe and was known to the Greeks and Romans, although they made little use of it before the Christian

era. Its cultivation was supposedly introduced into Europe by the Scythians about 1500 B.C.

Hemp is cut by machinery when the pollen plants are in flower, and retted like flax. Seeds of European hemp were brought to America by the colonists, who raised it in large quantities and rigged up their early sailing vessels with hemp ropes. When these ships visited the Philippine Is-

lands, they brought back Manila hemp fibers which, about the middle of the last century, due to their cheapness and greater strength, replaced the native-grown hemp fibers for use as marine cordage.

In early days, beginning in 1775, hemp was grown chiefly in Kentucky, spreading from there into other states. Russia formerly produced sixty per cent of all that was grown, the rest being produced by Italy and Hungary, but with war and importation problems, the United States is cultivating it again. At present Wisconsin leads in producing the so-called Kentucky hemp of Chinese origin, but it can be grown in California, Minnesota, Iowa, Illinois, and Indiana. It grows best on the good soil in the corn belt and yields twice as much fiber per acre as flax. It is also cultivated in Asia and Europe, as well as in Chile and Argentina.

Hemp fibers, which cannot be bleached perfectly white and are coarser than flax but not so strong, are used for cordage, carpets, sailcloth, and tarpaulins; and as oakum for packing pumps and calking boats.



FLAX

Jute is the bast fiber of plants belonging to the linden family—woody, little-blanchied annuals, growing in slender stalks with oblong leaves and small yellow flowers. The province of Bengal, India, produces most of the jute fiber, which is weaker than hemp, does not bleach as well, loses strength when exposed to dampness, and is difficult to spin into fine

threads. Jute is important, however, in making gunny sacks—used commercially to ship coffee, sugar, grain, fertilizer, and stock feed—and for sand bags for flood protection and defense against attacks in wartime. Jute fibers are also made into the burlap used in linoleum backing, tarpaulins, and carpets, and into burlap sacks for wrapping bales of cotton, yarn, and wool. Other uses of the fibers are in twines, ropes, curtains, upholstery fabrics, and matting. Even though the short ends of the stalks and the rough fibers rejected in preparing jute are inferior and command lower prices, they are imported in large amounts as paper stock. While attempts have been made to cultivate jute here and in other countries, it has failed to establish itself outside of India. Without efficient methods of preparing the fiber, it cannot be produced cheaply enough to compete with that produced by India's cheap hand labor.

Ramie, or China grass, the bast fiber of a shrub of the nettle family, is a fiber of increasing importance. An Asiatic perennial, with thick, round,

or heart-shaped leaves that are green above and woolly white beneath, it has clusters of small greenish-yellow flowers. If the canes are cut during the growing season, new shoots will grow and then two or three crops may be cut annually. Ramie has been used since primitive times in Southwestern China, where it originated in mountain valleys, but it was practically unknown outside of Eastern Asia until after the middle of the last century. Today it is chiefly grown and extensively used in China, and to some extent in India. Despite the fact that its culture has been introduced into Europe, Africa, and the Western Hemisphere, cotton has largely replaced it, because there is great difficulty in cleaning the resistant gums from the fibers. It is, however, a valuable cordage fiber, and is used in China to make "grass cloth," in Japan for fish nets, and in Europe to make various fabrics.

Manila hemp, or abacá, is the leaf fiber of a tree of the banana family. A native of the Philippine Islands, it is similar to the common banana tree



JUTE

except that the leaves are narrower and the fruit not edible. Abacá is the Malay name used for the plant and the fiber by the natives before the advent of the Europeans. They use the finest samples for making abacá cloth.

The chief uses of Manila hemp fibers, which are longer than other commercial fibers, are in marine cordage and in all coarse cordage requiring strength, durability, and reliability. The United States has recently been using it in the manufacture of strong tissue papers; and the discarded rope is valuable for the strong paper used in flour, cement, and similar sacking. Recent tests prove that abacá is the strongest fiber regularly used in cordage, because it lasts longer than other rope, absorbs water slowly, does not harden or stiffen when wet, and is resistant to injury from salt water. Since the occupa-



HEMP



COTTON

tion of the Philippines by the Japs, however, our supply has been greatly altered and we must turn to substitutes for it.

Common hemp was used for ropes before the advent of Manila hemp, and henequen and sisal—both native fibers—are likewise used for cordage.

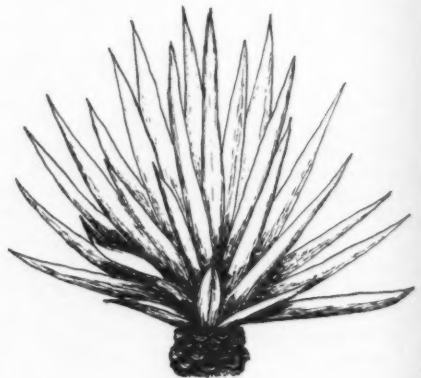
Henequen, the leaf fiber from henequen plants, often called century plants, consists of a rosetta of gray leaves rising either from the ground or, in older plants, from a trunk composed of dead leaf bases. Originally henequen was a native of Yucatan, where 440,000 acres are now cultivated. There are some plantations in other parts of Mexico, in Jamaica, Cuba, and in East Africa. While the plants may live from ten to twenty years, they flower only once, and then die. The flowers either set seed or produce bulbils, both of which are used for propagation, as are the many suckers that grow up from the rootstalks of the plants.

Leaves of the henequen are cut twice a year after the plantation reaches fiber production, and this harvesting may go on for ten to twenty years, or until the plants no longer yield good leaves. Used chiefly in binder twines for tying sheaves of grain, the fibers are also used to make other hard fiber twines and ropes. In Mexico the leaf is softened and spun into yarn that is

woven into sacking and other products.

Sisal, like henequen, is the name of another member of the amaryllis family that is cultivated for its leaf fibers. It also originated in the Yucatan Peninsula and is still cultivated there to a limited extent; but the region where henequen is grown is too dry for sisal. About 1834 both were introduced into southern Florida, where the sisal became naturalized and the henequen did not. The bulbils of these sisal plants were taken to the countries where it is now cultivated—namely, Haiti, East Africa, and Java and Sumatra. Like henequen, they are tropical plants and are propagated, cultivated, and harvested in the same manner. Used for binder twines and marine cordage, sisal has been a most satisfactory substitute for manila rope. The fibers are made into bagging for coffee sacks and covering for cotton bales, which are superior to those made from jute.

The most important plant fiber comes from the cotton plant. Unlike the bundles of cells of bast fibers of flax and hemp, however, the individual cotton fiber grows out from the seed. Cotton plants belong in the mallow family and are tall, stout, herbaceous annuals when cultivated in the temperate regions, but often shrubby perennials in the tropics. The leaves are heart-shaped,



SISAL

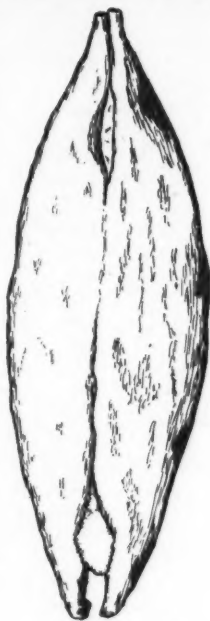
and the flowers are white, yellow, or purplish. It is in the bolls containing the seeds that the fibers are found which, because of their natural twist, can be woven into threads and yarns.

Cotton is supposedly the only plant of economic importance that was cultivated independently in both the Old and New World. Cotton cloth has been found in India in ruins that are five thousand years old; and Columbus found the American aborigines using it. When the Spaniards arrived, cotton was being grown in Mexico, and other parts of the New World. In the Mediterranean region, it was not cultivated until the beginning of the Christian era, and its true value as a textile fiber was not known until the Middle Ages.

After the invention of the cotton gin in 1792, cotton-growing received a great impetus. The United States now produces two-thirds of the annual crop. There are six commonly grown species, with the commercial cotton, like hemp, taking its name from the country in which it is raised. India, China, Egypt, Asiatic Russia, and Brazil are all important producers of this fiber.

It is used for yarn and thread to make rope and fabrics; for batting and absorbent cotton; and for nitrocellulose for explosives, celluloid, and artificial silk.

Silk cotton, or kapok, is the name applied both to the tree and to the downy fibers produced in the seed pods of a tropical tree of the bombax family, native to Southern Mexico and Central America. The kapok tree attains a height of one hundred feet, and bears flowers in pinkish-white clusters. The



POD OF KAPOK

white fibers are produced inside the spindle-shaped, thin-walled pods, but seldom on the seeds, and when the pod ripens and opens, the fibers are not attached. These trees have been distributed throughout the tropics of both hemispheres, and the fiber is now produced in Java, the Philippine Islands, West Africa, and Ecuador. It grows well in many areas of the American tropics, but it has not been well developed because so much hand labor is required to harvest and prepare it.

Kapok is more buoyant than cork because the fibers are cylindrical cells filled with air. Since this buoyancy is combined with lightness, kapok is used in life preservers and life jackets. It is more

resilient than cotton or similar soft materials used in mattresses and cushions, and, because it is a vegetable fiber like cotton, it is not eaten by moths. Unlike cotton, however, the fibers do not cling together, so cannot be readily spun into yarn, and are not durable because the fibers break down under repeated crushing or beating. Because the fiber walls are thin and impervious to both water and air, kapok has insulating properties that make it excellent for use in walls of refrigerators, ice-cream storage containers, and in the walls of present-day airplanes.

It has recently been discovered that the fibers from the pods of wild milkweeds and those from the cat-tail may be used as a substitute for kapok, and it may be that other discoveries will come along as an expedient of the war that will take the place of all these plant fibers in our daily lives and environment.



"THE PLAY'S THE THING"

Reviewing Congreve's "*The Way of the World*"

BY AUSTIN WRIGHT

Associate Professor of English, Carnegie Institute of Technology



DESTINY is ordinarily a capricious jade, but in selecting the year 1700 for the appearance of William Congreve's *The Way of the World* she showed for once a sense of fitness that no mortal may impugn. The play

perches on the border between two centuries, between two periods of English literature, between two ages of English history. Before it the Restoration, after it the Age of Anne. Dryden, the literary dictator of the earlier period, died a few weeks after the play appeared; the unfortunate James Stuart, "the king over the water," and William of Orange, his rival and successor, were to be borne to the sepulcher within two years. Congreve himself seemed to have a presentiment that the new world would have no place for the old protagonists, for after *The Way of the World* he wrote no more. Meanwhile, on the threshold of the century waited the writers who were to add such luster to the Augustan Age. Swift, eating his heart out in Ireland, was thirty-three; Addison and Steele were both twenty-eight; Pope was only twelve. And the men who were to struggle for political power throughout the reign of Anne and beyond were about to emerge from obscurity. The great Marlborough, though fifty, had yet to become the hero of Blenheim; Harley was thirty-nine, St. John twenty-two; the boorish German princeling who would become the first of the Georges was a fat forty;

the hopes of the sad House of Stuart, fated to be trampled at last into the bloody soil of Culloden half a century later, were centered in young James Edward, a promising lad of twelve. How old was Anne? Thirty-five.

In 1700 Congreve was at the zenith of an amazing career which had made him the author of a successful comedy at twenty-three and the acknowledged leader of the British theater at thirty. Witty, handsome, fortunate in love, adept at living comfortably without the necessity of toil, he had suffered only one major annoyance—the attack of the sharp-tongued Jeremy Collier in the famous *Short View of the Immorality and Profaneness of the English Stage*. There is a tradition that Congreve ceased to write comedies because of Collier's barbs, but it is likely that the comparative failure of *The Way of the World* had something to do with his decision. That his most carefully polished work did not win popular acclaim may well have been a cause of bitterness to an indolent man of fashion who prided himself more on being a gentleman than on being an author. And yet its failure, brilliant though the play is, need not have astonished him, for the plot is so complicated, the motives of some of the characters so difficult to keep in mind, and the action so slow that even audiences of 1700, accustomed as they were to the conventions of Restoration comedy, were bound to find the play growing tedious. At the end one is inclined to gasp, in the words of a character from another play by Congreve, "I am confounded when I look back, and want a clue to guide me through the various mazes of unheard-of treachery." *Love*

for *Love*, produced in the Little Theater at Carnegie Tech in 1934, is a much better acting play, and so, I believe, is Farquhar's *The Beaux' Stratagem*, produced in 1937. And yet in some respects *The Way of the World* fully deserves the designation of "the flower of Restoration comedy" applied to it by many critics: it is unsurpassed for wit, and its phrasing is of a brilliance that dazzles lesser writers and makes them throw aside the pen in despair.

The only method, however, by which a modern playgoer can hope to perceive this brilliance clearly is to re-read the play before seeing it produced. Then he will savor the amazing virtuosity, the cleverness, the mental and verbal agility of the man who wrote the speeches of Mirabell and Millamant, of Witwoud and Lady Wishfort. Every reader will look for and relish his favorite passages—such as the duel of wits between Millamant and Mirabell when first the lady and then the gentleman stipulate the conditions under which they will risk matrimony, or the exchange that follows Mirabell's charge that beauty is solely the lover's gift; Lady Wishfort's coy agitation as she maps the campaign against Sir Rowland, or her protests to her bogus suitor that he should not attribute her suspiciously

prompt yielding to the least scruple of carnality; the polite innuendoes exchanged by Mrs. Marwood and Mrs. Fainall, or the splendidly inane chatter of Witwoud. To paraphrase Millamant, who in turn was paraphrasing Mercutio, one needs a screen to stand between one and Congreve's wit.

What of Congreve's morality? Charles Lamb wrote, in 1822, "Congreve and Farquhar show their faces once in seven years only, to be exploded and put down instantly. The times cannot bear them." And he went on to develop his famous plea that the world of Restoration comedy is a world apart from ours, and that our moral sense should not be offended by the actions and philosophy of the men and women who form Congreve's artificial society. Though this defense could hardly have been advanced seriously by one of Congreve's contemporaries, it is indeed a shrewd analysis of the effect produced by Restoration comedy upon audiences of later ages. And in *The Way of the World* there is far less obscenity than in the comedies of Wycherley, or even in Congreve's own earlier works. The immorality is rather one of atmosphere than of language. A society which by its patronage has made plays like *Tobacco Road* into phenomenal successes cannot with



STUDENT ACTORS IN A SCENE FROM "THE WAY OF THE WORLD"

justice cry out at the occasional bawdry in *The Way of the World*, but we do feel uneasiness at seeing even the heroes and heroines of Congreve's plays follow as the whole business of their brief existence what Lamb calls "the undivided pursuit of lawless gallantry." The characters of Restoration comedy coolly accept intrigue as normal and indeed inevitable, and no one thinks of raising a voice against it. Mirabell has had an intrigue with Mrs. Fainall, and not only is the affair a topic of light conversation between them, but Mrs. Fainall willingly aids Mirabell in his pursuit of Millamant. Mrs. Fainall herself has married in order to have a father for her child, and her husband has married solely for money; the two detest each other. Mrs. Marwood intrigues with Fainall though she really loves Mirabell, and Lady Wishfort is so amorous that she is easily duped: first by Mirabell's pretended passion and then by the preposterous scheme involving the pretended Sir Rowland. Even Millamant, the only virtuous woman in the play, shows no distaste for the debauchery that surrounds her, and desires nothing better than to marry the tainted Mirabell and take her place as a member of that corrupt society.

To produce *The Way of the World* for a modern audience is a task so fraught with difficulty that only a director of courage and confidence would undertake it. The play is very long, the plot is puzzling, the language seems strange to our ears, the society pictured is a vanished one nearly incomprehensible to us. Yet the production staged by the Department of Drama at Tech under the direction of Mary Morris was in many respects a triumph, a memorable performance for which in particular every observer interested in the history of the theater was grateful. Though not always perfect, the diction was unusually clear, and the student players succeeded in sustaining audience interest throughout the lengthy colloquies which follow one upon another from curtain to cur-

tain. The humorous scenes were universally successful—extremely amusing without being overplayed. The production blazed with color: the girls were lovely in their period costumes, and though, on their first appearance, Mirabell and Fainall looked somewhat grotesque to modern eyes, their elaborate wigs and bright clothing soon ceased to seem strange—particularly after the entrance of the far more extravagantly garbed Witwoud and Petulant. I feel, however, that the costumes of the period did more for women than for men—but perhaps I do not view this subject with completely impartial eyes. The settings designed by Richard V. Hare formed an effectively simple background, and the music arranged by Milton Levine was austere, pleasant, and appropriate. I, for one, am glad that Miss Morris decided to present the play in its entirety, but there is no denying that judicious cutting would have resulted in a more brisk and spirited production. Yet I find that it is not easy to suggest what might have been omitted without loss. The two dances? Perhaps, but these dances, arranged by Genevieve Jones, were lively and supplied agreeable diversions which I should have been sorry to miss. The prologue and epilogue? But both were well delivered and helped to create for the audiences the atmosphere of Lincoln's Inn Fields in 1700, when the first was spoken by Betterton and the second by Anne Bracegirdle. Possibly minor scenes might have been eliminated, or stretches of dialogue here and there; but Miss Morris would have had to be very careful to cut without deleting brilliant passages or bits of plot necessary to an understanding of later developments.

In this production all the male roles were single-cast, the female roles double-cast. Mirabell was a commanding figure and spoke his lines with an assurance and finesse that all but made up for an occasional slurring of syllables. The actor seemed, however, too consistently solemn and reserved. It is

true that Mirabell is depressed in regard to the progress of his suit for Millamant, but it is also true that he is a rake, a deviser of stratagems, a wit who wins ladies' hearts by his tongue as much as by his handsome appearance, a pleasure-loving man of the world who enjoys mocking at Witwoud and circumventing Fainall. Fainall was energetically if not very subtly played, and no one could accuse the actor of not speaking distinctly. This character, with his "heart of proof and something of a constitution to bustle through the ways of wedlock and this world," is one of the best of the Restoration villains.

Witwoud is certainly one of the most delightful of the effeminate fribbles who thronged the Restoration stage and provided the more serious characters with a butt for their witticisms. In the Tech production Witwoud was something of a triumph for both director and actor. I found him consistently amusing, and his empty but diverting prattle won for him just the mixture of contempt and tolerant affection that Congreve meant to inspire in audiences. As for Petulant, I believe that Congreve intended him to be somewhat less similar to Witwoud than he was made to appear. His name and many of his speeches suggest that in comparison with his fellow booby he is meant to be surly, sardonic, and ill-natured—and hence equally absurd though less frivolous. The role of Waitwell, though minor, is an excellent acting part. Waitwell in his disguise as Sir Rowland was not very subtle—but then I suppose that in real life a valet impersonating a peer in order to deceive a gullible elderly lady would not include subtlety among his attributes. Sir Wilfull was a favorite with the audiences, and rightly so. He is one of the most amusing of the hundreds of honest but stupid country squires who abound in the literature of the seventeenth and eighteenth centuries, and at Tech he was played with a broad heartiness and a firmness of

touch that made the most of each funny situation or speech.

Both groups of actresses gave competent and surprisingly convincing performances, and it would not be profitable to attempt to distinguish between them here in any detailed way. The difficult role of Millamant, played in 1700 by beautiful Anne Bracegirdle, was handled in a manner to forestall disappointment—a real achievement in view of the fact that Millamant is considered the most charming product of the whole school of comedy of manners, and that Congreve himself arouses our anticipation by delaying her appearance until the play is one-fourth over and meanwhile having Mirabell repeatedly sing her praises with a lover's extravagance. She was lovely, graceful, full of spirit, cruel to Mirabell in her assurance of his love, yet obviously playing a game and pretending coolness because she is fearful of revealing her passion in a way contrary to the rules.

Both Mrs. Marwoods deserve praise for the scenes with Fainall, and mention should also be made of their skillful handling of the incident of Sir Wilfull's arrival, when Marwood good-naturedly intervenes to protect the honest rustic from the "smoking" of Petulant and Witwoud. Mrs. Fainall is a character whom I have never been able to understand; in creating her, Congreve imposes upon our credulity. Once Mirabell's mistress and still in love with him, she yet conspires to deceive her mother and win for him her brilliant cousin Millamant's hand and fortune. As Marwood says, on learning of the scheme, "A pattern of generosity that, I confess!" But she was played sympathetically in this production, and it may be that one who only sees the play is not troubled by the inconsistency of her actions.

Lady Wishfort does not make an appearance until the beginning of Act III, but from that point on she is a very important figure. The ridiculous side of her character was emphasized, and this

is as it should be—though her make-up, resembling nothing else so much as an artist's palette, was certainly extreme. The first Lady Wishfort spoke in a stentorian voice with an amusing break in it which made even ordinary lines seem funny, but the mannerism grew a little tiresome. Both actresses flung out with admirable force Lady Wishfort's marvelous tirades against Peg and Mirabell and Foible, and portrayed well her struggle between decorum and haste in her relations with Sir Rowland. They suggested, too, the pathetic side of Lady Wishfort's situation, and her genuine love for her daughter and shame at the prospect of having to deprive Millamant of her fortune.

The role of Foible, like that of Waitwell, is a splendid acting part and of even greater importance to the plot. The contrived marriage between these two gives rise to several of the most amusingly ribald lines in the play. The first Foible was more like an artful and practiced schemer than the second, who seemed like a light-hearted servant girl participating in the plot against her mistress for the sheer fun of the adventure. The two Mincings made their small role stick in the memory; I recall with particular vividness the glances and nods and smiles of the second Mincing as she spoke her few lines.

The Tech production of *The Way of the World* carried its audiences back into the seventeenth century, and re-created the vanished world of William III and Dryden and Marlborough as no amount of mere reading would do. There was much that was trifling and ephemeral about that world, much that was corrupt and heartless and cruel. Yet what society feels sufficiently confident of its superiority to cast stones at the sensual gallants and frail ladies of the days of Congreve? As one sees their ghosts parade across the stage in a modern revival of a comedy that diverted them, one feels as Browning did when the playing of a toccata composed by a dead Venetian organist called up in the poet's mind a picture of the sensual

vanity and beauty of once-mighty Venice:

"As for Venice and her people, merely born to bloom and drop.
Here on earth they bore their fruitage, mirth and folly were the crop:
What of soul was left, I wonder, when the kissing had to stop?
Dust and ashes!" So you creak it, and I want the heart to scold.
Dear dead women, with such hair, too—what's become of all the gold
Used to hang and brush their bosoms? I feel chilly and grown old.

GLOBAL QUESTION BOX

A SOLDIER somewhere in the South Pacific sent a question home on his Christmas card, which was forwarded to the CARNEGIE MAGAZINE for answer—namely, "What is it that makes a popping noise in the mangrove swamps both day and night?" We asked Dr. Stanley Truman Brooks, Curator of Invertebrate Zoology in the Carnegie Museum, to answer this question for the Magazine readers, and here is his answer:

Nature has many voices. Some of the presumably "dumbest beasts" make noises in one way or another. Sounds like those of an aeolian harp may be made by snails "scuffing" their shells against the bark of trees. Oysters and other molluscs may confuse the sonic apparatus used in determining the depths of the sea through the "clapping together" of their shells. Other molluscs expel water or air to cause certain sudden noises. But the "popping noise" heard by the soldier in the South Seas is an open question.

From all evidences, the noise would normally emanate from either molluscs or crustaceans. Mangrove swamps at tide water are excellent areas for the small oysters, called coon oysters in the southern United States. More logical, however, would be the explanation that the noise came from one of the shore crabs. The pistol crab abounds on coral reefs, and anyone walking among them at low tide is bombarded

from
soun
ble
whe
rubu
gun
carc
mad
whe
anim
tion
hopp
bing
Some
crab
effec
Th
and
bata
pani
like
A sc
these
Nati
these
the
tary
noise
Th
not
of th
love
and
an in
we c
serve
noise
will
crabs
pack

The
not th
power
solini
portan
moral
others
averag
are be
God,
towar

from all sides by sharp reports. This sound is made by a plug on the movable finger of the larger pincer, which, when the pincer is closed, fits into a tubular pocket, thus creating the "pop-gun" effect. It is still a question with carcinologists whether the noise is made upon closing the claw-hand or when opening it. It seems that this animal fits into the soldier's description. Other crabs stridulate like grasshoppers, others make noises like rubbing a moist finger on a window pane. Some trill tones that are dulcet for a crab, while others use definite tonal effects for different purposes.

There are military crabs which turn and wheel in shimmering and colorful battalions of blue and yellow, accompanied by a rustling, swishing sound like wind through dried reeds or grasses. A scientist who has made a study of these noises, Dr. Waldo Schmitt, of the National Museum, intimates that here these sounds may be connected with the change of movement of the military masses—a purposeful and guiding noise.

The sounds of nature are legion and, not the least of these, is the language of the crabs and shrimps. They make love calls, warning cries, cries of anger, and a chattering "All's well." It is an interesting field of investigation, and we envy the soldier his chance to observe and discover what makes this noise in the mangroves. Perhaps he will find one of those pistol-packin' crabs making jive for his own pistol-packin' mamma!

CHARACTER IN EVIL

The peculiarity of present-day forms of evil is not the enormity of the evil but the enormity of its power. For who are these men: Hitler, Mussolini, and Stalin? Are they extraordinarily important men, or particularly gifted men? In a moral sense they are not more important than others; intellectually they are scarcely above the average. But they are filled with egoism. They are bereft of all sense of responsibility toward God, which means that they are not orientated toward their fellow human beings as brothers.

—PIERRE VON PAASSEN

CARNEGIE LIBRARY OFFICERS AND COMMITTEES

WILLIAM FREW, *President*
WILLIAM WATSON SMITH, *Vice President*
A. L. WOLK, *Secretary*
THOMAS L. ORR, *Treasurer*

LIBRARY COMMITTEE

A. L. WOLK, *Chairman*
JOHN F. CASEY H. B. KIRKPATRICK
WALTER R. DEMMLER WILLIAM S. MOORHEAD

BUILDINGS AND GROUNDS COMMITTEE

JOHN F. CASEY, *Chairman*
ARTHUR E. BRAUN CORNELIUS D. SCULLY
THOMAS J. GALLAGHER FRED W. WEIR

FINANCE COMMITTEE

ARTHUR E. BRAUN, *Chairman*
JOHN F. CASEY WILLIAM FREW
 THOMAS L. ORR

AUDITING COMMITTEE

FREDERICK G. BLACKBURN, *Chairman*
GEORGE E. EVANS A. L. WOLK



STAFF

RALPH MUNN, *Director*
ADALINE BERNSTEIN, *Head of Order Department*
MARY E. FOSTER, *Head of Schools Department*
ELLWOOD H. McCLELLAND, *Technology Librarian*
RUTH D. MCCOLLOUGH, *Head of Catalogue Department*
ALICE THURSTON MCGIRR, *Reference Librarian*
ARTHUR D. SCOTT, *Head of Printing and Binding Department*
ELVA S. SMITH, *Head of Boys and Girls Department*
MARTHA V. WIRTH, *Executive Secretary*

BEQUESTS

In making a will, bequests for the Carnegie Library may be as follows:

I do hereby give and bequeath to the
CARNEGIE LIBRARY OF PITTSBURGH

.....Books, or.....Dollars

THE CARNEGIE MAGAZINE

CARNEGIE INSTITUTE OFFICERS AND COMMITTEES

WILLIAM FREW, *President*
ROY A. HUNT, *Vice President*
AUGUSTUS K. OLIVER, *Secretary*
THOMAS L. ORR, *Treasurer*

MUSEUM COMMITTEE

GEORGE H. CLAPP, *Chairman*
FREDERICK G. BLACKBURN THOMAS E. KILGALLAN
HOWARD N. EAVENSON RICHARD K. MELLON
GEORGE E. EVANS W. L. MELLON
THOMAS J. GALLAGHER JAMES C. REA
H. J. HEINZ II FREDERIC SCHARFER

JOHN B. SEMPLE

FINE ARTS COMMITTEE

MOORHEAD B. HOLLAND, *Chairman*
EDWARD DUFF BALKEN WILLIAM S. MOORHEAD
J. FREDERIC BYERS AUGUSTUS K. OLIVER
ROBERT E. DOHERTY CHARLES J. ROSENBLOOM
HOWARD N. EAVENSON FREDERIC SCHARFER
ROY A. HUNT CORNELIUS D. SCULLY
WILLIAM WATSON SMITH

AUDITING COMMITTEE

FREDERICK G. BLACKBURN, *Chairman*
GEORGE E. EVANS A. L. WOLK

FINANCE COMMITTEE

ARTHUR E. BRAUN, *Chairman*
JOHN F. CASEY THOMAS L. ORR
WILLIAM FREW JAMES C. REA
ROY A. HUNT WILLIAM M. ROBINSON

PENSION COMMITTEE

HOWARD N. EAVENSON, *Chairman*
H. J. HEINZ II EDWARD J. LEONARD
MOORHEAD B. HOLLAND JAMES C. REA

MUSIC HALL COMMITTEE

WILLIAM P. WITHEROW, *Chairman*
JOHN F. LABOON JOHN LESTER PERRY
EDWARD J. LEONARD JAMES C. REA

ADVISORY COMMITTEE

FREDERICK G. BLACKBURN MOORHEAD B. HOLLAND
ARTHUR E. BRAUN ROY A. HUNT
JOHN F. CASEY AUGUSTUS K. OLIVER
GEORGE H. CLAPP THOMAS L. ORR
HOWARD N. EAVENSON WILLIAM WATSON SMITH
WILLIAM FREW WILLIAM P. WITHEROW
A. L. WOLK

NOTE: The President is ex officio a member of all Committees.

CARNEGIE INSTITUTE STAFF

WILLIAM FREW, *President*
J. C. JEFFRIES, *Auditor*
WILLIAM A. MORTEN, *Assistant Treasurer*
MINNIE C. RANKIN, *Secretary to the President*

DEPARTMENT OF FINE ARTS

HOMER SAINT-GAUDENS, *Director*
JOHN O'CONNOR, JR., *Acting Director*
ANNE K. STOLZENBACH, *Secretary*
MARGARET M. LEE, *Director of Educational Work*

CARNEGIE MUSEUM

ANDREY AVINOFF, *Director*
O. E. JENNINGS, *Curator of Botany and Director of Public Education*
STANLEY T. BROOKS, *Curator of Invertebrate Zoology*
J. KENNETH DOUTT, *Curator of Mammalogy*
OTTMAR F. VON FUHRER, *Staff Artist*
MAUD J. GITTINGS, *Librarian*
ARTHUR W. HENN, *Curator of Ichthyology*
J. LE ROY KAY, *Curator of Vertebrate Paleontology*
M. GRAHAM NETTING, *Curator of Herpetology*
WALTER R. SWEADNER, *Curator of Entomology*
W. E. CLYDE TODD, *Curator of Ornithology*
I. P. TOLMACHOFF, *Curator of Invertebrate Paleontology and Acting Curator of Mineralogy*
EUGENIA MCCALLA, *Secretary*

CARNEGIE MUSIC HALL

MARSHALL BIDWELL, *Organist and Director of Music*
ROY B. AMBROSE, *Manager*

DEPARTMENT OF BUILDINGS & GROUNDS

ROY B. AMBROSE, *Manager*
HATTIE W. STOUPE, *Secretary*

BEQUESTS

In making a will, money left to the Carnegie Institute or the Carnegie Institute of Technology, should be covered by the following phrase:

*I do hereby give and bequeath to the
CARNEGIE INSTITUTE*

(or)
*CARNEGIE INSTITUTE OF TECHNOLOGY
in the City of Pittsburgh, Pennsylvania.*

..... Dollars

THE CARNEGIE MAGAZINE

CARNEGIE INSTITUTE OF TECHNOLOGY

OFFICERS AND COMMITTEES

WILLIAM FREW, *Chairman*
ROY A. HUNT, *Vice Chairman*
AUGUSTUS K. OLIVER, *Secretary*
THOMAS L. ORR, *Treasurer*

ROBERT E. DOHERTY, *President* EXECUTIVE COMMITTEE

WILLIAM FREW, *Chairman*
AUGUSTUS K. OLIVER, *Secretary*

FREDERICK G. BLACKBURN* F. B. JEWETT
WALTER J. BLENKO *ANTHONY J. KERIN
ROBERT E. DOHERTY JOHN F. LABOON
HOWARD N. EAVENSON *ROSWELL MILLER
GEORGE E. EVANS WILLIAM S. MOORHEAD
*J. C. HORNS THOMAS L. ORR
ROY A. HUNT *CHARLES E. WILSON

WILLIAM P. WITHEROW
(*Nontrustee members)

AUDITING COMMITTEE

FREDERICK G. BLACKBURN, *Chairman*
GEORGE E. EVANS A. L. WOLK

FINANCE COMMITTEE

ARTHUR E. BRAUN, *Chairman*
JOHN F. CASEY THOMAS L. ORR
WILLIAM FREW JAMES C. REA
ROY A. HUNT WILLIAM M. ROBINSON



STAFF

ROBERT E. DOHERTY, *President*
H. R. PATTON, *Controller*
RALPH MUNN, *Librarian*

COLLEGE OF ENGINEERING

WEBSTER N. JONES, *Director*
WILLIAM R. WORK, *Assistant Director*

DEPARTMENT HEADS

WARREN L. McCABE, *Chemical Engineering*
F. M. McCULLOUGH, *Civil Engineering*
WILLIAM R. WORK, *Electrical Engineering*
LAWRENCE R. GUILD, *Management Engineering*
THOMAS G. ESTEP, *Acting Head, Mechanical Engineering*
ROBERT F. MEHL, *Metallurgical Engineering*
J. C. WARNER, *Chemistry*
HAROLD A. THOMAS, *Acting Head, Mechanics*
FREDERICK SEITZ, *Physics*
GLEN U. CLEETON, *Printing*
HARRY M. McCULLY, *Drawing and Descriptive Geometry*

COLLEGE OF FINE ARTS

GLENDINNING KEEBLE, *Director*

DEPARTMENT HEADS

W. FRANK HITCHENS, *Architecture*
GLENDINNING KEEBLE, *Acting Head, Drama*
J. VICK O'BRIEN, *Music*
W. A. READIO, *Painting and Design*
JOSEPH BAILEY ELLIS, *Sculpture*

MARGARET MORRISON CARNEGIE COLLEGE

CHARLES WATKINS, *Director*

DEPARTMENT HEADS

VIRGINIA M. ALEXANDER, *Costume Economics*
HAROLD L. LANG, *General Science*
HARRIET F. GLENDON, *Household Economics*
EDITH M. WINCHESTER, *Secretarial Studies*
MARY CLARKE BURNETT, *Social Work*
MABEL B. TRILLING, *Vocational Home Economics*

DIVISION OF HUMANISTIC AND SOCIAL STUDIES

WILLARD E. HOTCHKISS, *Director*
GLEN U. CLEETON, *Assistant Director*

DEPARTMENT HEADS

KENNETH FIELD, *Economics*
MALCOLM McLEOD, *English*
ROBERT D. GREGG, *History*
LLOYD L. DINES, *Mathematics*
WILLIAM F. KAMMAN, *Modern Languages*
MAX SCHORN, *Psychology and Education*

CARNEGIE LIBRARY SCHOOL

RALPH MUNN, *Director*
FRANCES H. KELLY, *Associate Director*

COAL RESEARCH LABORATORY

H. H. LOWRY, *Director*

METALS RESEARCH LABORATORY

ROBERT F. MEHL, *Director*

ARMY SPECIALIZED TRAINING PROGRAM

MAJOR RAYMOND W. BOBERG, *Commandant*

DIVISION OF STUDENT PERSONNEL AND WELFARE

BERYL E. WARDEN, *Director*

DIVISION OF PHYSICAL WELFARE

CLARENCE OVEREND, *Chairman of Administrative Committee*

BUREAU OF NEWS AND PUBLICATIONS

MAX E. HANNUM, *Manager*

THE CARNEGIE MAGAZINE

BOARD OF TRUSTEES WHO'S WHO

Under the charters the same thirty-six trustees serve both the Carnegie Institute and the Carnegie Institute of Technology, and eighteen of them (starred) are also trustees of the Carnegie Library.

EDWARD DUFF BALKEN
Princeton. Art.

FREDERICK G. BLACKBURN
Yale. Carnegie Institute of Technology. Vice President, Union Trust Company. Museum, Tech, Auditing, Advisory.

WALTER J. BLENKO
Carnegie Institute of Technology. Law School Duquesne University. Stebbins, Blenko & Webb. Tech.

*ARTHUR E. BRAUN
President, Farmers Deposit National Bank. Buildings and Grounds, Finance, Advisory.

*J. FREDERIC BYERS
Yale. Chairman, A. M. Byers Company. Art.

*JOHN F. CASEY
Duquesne University. Chairman, John F. Casey Company. Library, Buildings and Grounds, Finance, Advisory.

GEORGE H. CLAPP
University of Pittsburgh. President, Board of Trustees, University of Pittsburgh. Museum, Advisory.

*WALTER R. DEMMLER
City Council. Library.

ROBERT E. DOHERTY
University of Illinois. President, Carnegie Institute of Technology. Tech, Art.

HOWARD N. EAVENSON
Swarthmore. Mining Engineer. Museum, Pension, Tech, Art, Advisory.

*GEORGE E. EVANS
University of Pittsburgh. City Council. Museum, Auditing, Tech.

*WILLIAM FREW
Yale. Law School University of Pittsburgh. Trustee, Carnegie Corporation of New York.

*THOMAS J. GALLAGHER
City Council. Museum, Buildings and Grounds.

H. J. HEINZ II
Yale. President, H. J. Heinz Company. Museum, Pension.

MOORHEAD B. HOLLAND
Princeton. Law School University of Pittsburgh. Vice President, Peoples-Pittsburgh Trust Company. Art, Pension, Advisory.

ROY A. HUNT
Yale. President, Aluminum Company of America. Art, Tech, Finance, Advisory.

*THOMAS E. KILGALLEN
Duquesne University. President, City Council. Music Hall.

*H. B. KIRKPATRICK
University of Illinois. President, Pittsburgh Board of Public Education. President, Koppers Building, Inc. Library.

JOHN F. LABOON
Carnegie Institute of Technology. Director, Allegheny County Bridges, Highways, and Tunnels. Tech, Music Hall.

*EDWARD J. LEONARD
City Council. Music Hall, Pension.

RICHARD K. MELLON
Princeton. President, Mellon National Bank. Museum.

*W. L. MELLON
Chester Military Academy. Chairman, Gulf Oil Corporation. Museum.

*WILLIAM S. MOORHEAD
Yale. Law School University of Pittsburgh. Moorhead and Knox. Tech, Library, Art.

AUGUSTUS K. OLIVER
Yale. Chairman, Pittsburgh Coal Company. Art, Tech, Advisory.

*THOMAS L. ORR
Hamilton. Vice President and Cashier, Mellon National Bank. Tech, Advisory.

JOHN LESTER PERRY
President, Carnegie-Illinois Steel Corporation. Music Hall.

JAMES C. REA
Princeton. Vice President, Oliver Iron and Steel Company. Museum, Music Hall, Pension, Finance.

*WILLIAM M. ROBINSON
Princeton. Law School University of Pittsburgh. Reed, Smith, Shaw & McClay. Finance.

CHARLES J. ROSENBLUM
Yale. President, Rosenbloom Finance Corporation. Art.

FREDERIC SCHAEFER
University of Pittsburgh. President, Schaefer Equipment Company. Museum, Art.

*CORNELIUS D. SCULLY
University of Pennsylvania. Law School University of Pittsburgh. Mayor of Pittsburgh. Art, Buildings and Grounds.

JOHN B. SEMPLE
Lehigh. Museum.

*WILLIAM WATSON SMITH
Princeton. Smith, Buchanan & Ingersoll. Art, Advisory.

*FRED W. WEIR
City Council. Buildings and Grounds.

WILLIAM P. WITHEROW
Yale. President, Blaw-Knox Company. Music Hall, Tech, Advisory.

*A. L. WOLK
Columbia University. Law School University of Pittsburgh. City Council. Auditing, Library, Advisory.

Pittsburgh
Kappes

er, Al-
Tumulo.

Bank

Gulf Oil

Pittsburgh

ny. An.

Mellan

poration.

and Steel
ion, Fi-

Pittsburgh
.

poration.

Schafer

ool Uni-
rgb. An.

oll. An.

y. Musi

iversity of
Library.